

## APPENDIX C

### Comparison of Features

General Features	Comments	Johnson	Cummings	Pitroda	Ertel	Edelison/ Mayaud
System supports flexible configuration and access options. (p-3, 12-15) (p-16, 5-13)		X				
Open standards supported for hardware, software and firmware components and standardized medical codes, definitions and formats are supported. (p-3, 15-18) (p-8, 10-12) (p-17, 9 through p-18, 27)		X				
Provides information integral to management of entire health-care value chain. (p-3, 19-23) (p-8, 14-29)		X				
System is extensible to provide secure access to social security, annuity and retirement account and benefit information, providing a unified view of an individual's benefit and payment status using a single individual information device. (p-61, 23-26)		X				
Allows secure access to health care, social security, annuity, retirement account and benefit information. (p-3, 23-27) (p-8, 29-30 through p-9, 1-3)		X				
Provides centralized record collection linking local records to those stored remotely. (p-4, 1-4) (p-9, 5-10) (p-18, 29 through p-19, 28)		X				
Data integrity checking on all database fields during update process. Data elements run through edit routines defined within the central data dictionary to ensure data values are within correct ranges. Invalid entries result in error messages. (p-		X				

<i>General Features</i>	<i>Comments</i>	<i>Johnson</i>	<i>Cummings</i>	<i>Piroda</i>	<i>Ertel</i>	<i>Edelson/Mayaud</i>
47, 4-23) Centralized host used to maintain, consolidate and redistribute information generated at all access endpoints. (p-5, 11-15) (p-9, 5-10)		X				
Centralized security management covers all database parameters through platform services. (p-47, 25 through p-48, 2) (p-20, 1-7)		X				
System provides immediate transfer of results and information among specialist service providers, individuals and information sites. (p-3, 29-30 through p-4, 1-12) (p-9, 12-18) (p-12, 7-11) (p-13, 12-13)		X				
Individual service recipient provided with an individual information device for information access and security. (p-4, 14-20)		X	Optional	X		
Individual information device stores insurance information, emergency records and critical health care history. (p-4, 14-20) (p-15, 29 through p-16, 3)		X		X		
Can be implemented on a LAN or intranet (or internet) server. (p-4, 27-29 through p-5, 1-2)		X				
Services can be authorized through access to the host which can calculate costs of services as well as the amount of available insurance coverage. (p-5, 23-25) (p-9, 20-22) (p-13, 13-18)		X	Claimed, but not designed.			
System can be used to generate billing information and to electronically transfer funds from sources such as insurers, bank accounts and credit card accounts. (p-5, 25-27) (p-9, 22-24) (p-13, 20-21)		X	Payment claimed, but not designed.			
Insurance carrier can be electronically billed		X				

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and can remit payment through electronic funds transfer to the service provider's account at a specified payment interval. (p-5, 29-30 through p-6, 1) p-13, 20-22)						
Payment histories can be electronically transferred from the insurance carrier to the service provider on the network. (p-6, 1-3) (p-13, 22-24)		X				
Charges to service recipient can be calculated and transmitted to the service recipient. (p-6, 3-4) (p-13, 26-30)		X				
On-line diagnostic services provided. (p-6, 6-7) (p-9, 26-27) (p-12, 26-30 through p-13, 1-10)		X	Claimed but inoperable.			
System can be integrated with statistical analysis software. (p-6, 7-10) (p-9, 28-30)		X				
Messaging and scheduling services, appointment records and administrative information. (p-6, 12-14) (p-12, 13-17)		X	Appointment claimed, but not designed.			
Service historical records stored on system can be accessed by researchers. Records can be stripped of identifying information. (p-6, 16-20) (p-14, 11-20)		X				
Centralized data dictionary identifies codes for entire system, used in integrity checking, used in diagnostic checking, and used to define security access on fields (p-17, 1-22)		X				
Standardized vocabulary and data formats are used and are all defined through the centralized data dictionary to ensure universal usage and the ability to translate between standards bodies. (p-18, 12-27)		X				
Keys are defined for the linked datastores and show how datastore records are accessed and updated by system functions		X				

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and how the datastores are linked for research purposes. (p-14, 22 through p-16, 3)						
System designed to support non-peak batch transfers for non-critical administrative information to reduce bandwidth overhead and network contention. (p-14, 1-9)		X				
Central platform data storage, backup and restore mechanisms for applications management are designed into the shared platform services and provide disaster recovery capabilities. (p-20, 9-15)		X				
<i>Medical/Insurer/ Benefit/Provider features</i>	<i>Comments</i>	<i>Johnson</i>	<i>Cummings</i>	<i>Piroda</i>	<i>Ertel</i>	<i>Edelson/Mayaud</i>
Plan definition and update to plan/benefit and service provider databases. (p-26, 11-26)		X				
Users define all plan characteristics and limitations including coverage options, geographic coverage, lifetime treatment limits, support features, procedures and medications covered, service providers and categories of services provided, limitations on groups or individuals applying for coverage, and notification and payment options. (p-21, 2-16)		X				
Plan information includes procedures, pharmaceuticals, service providers and plan components linked with payment and reimbursement information. (p-26, 20-26)		X	Limited. No entry or usage method.			
Effective date capabilities on plan changes. (p-26, 28)		X				
Batched update and copy features for plan change simplification. (p-26, 28 through p-27, 2)		X				

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Automated notification of changes to all affected parties. (p-27, 1-3)		X				
Reduce or eliminate the costs of publishing and distributing directories of caregiver information through the automated notifications and on-line identification of providers. (p-21, 24-28)		X				
System provides marketing and enrollment support for care plans. (p-6, 22-25) (p-27, 5-20)		X				
Update for plan/benefit database with plan sponsor information. (p-27, 24-26 and p-28, 1-5)		X				
Update for subscriber database, as linked to plan sponsor database. (p-27, 26 through p-28, 5)		X	"Insured file" limited. No entry or access			
Update for service provider database, as linked to plan/benefit database. (p-27, 20-22)		X	"Physicians file". Just a note file.			
New or replacement individual information device can be requested for service recipient. (p-28, 7-9)		X				
Automated authorization of benefits. Multiple payment amounts calculated for multiple payers. Authorization record created with approval codes and payment amounts. (p-28, 11-28)		X	Authorization claimed but not designed.			
Authorization decline (due to plan parameters) transmits online decline message. Manual review procedures for exceptions, appeals and questions follows. (p-28, 28-30 and p-29, 1-2)		X	X			
Automated referral processing for in-plan		X	Referral			

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providers, geographic or affiliation search or for specific targeted referral. (p-29, 11-19)			claimed but not designed.			
Authorization approval for referral generated and sent to provider from host. (p-29, 21-22)		X				
Appointment request can be automatically generated and transmitted. (p-29, 22-24)		X	Request through phone call.			
Transmittal of invoices from service provider to insurer and electronic funds transfer to service provider account. (p-29, 26-30 through p-30, 1-24)		X				
Target payment account information processing and payment history record generation. Includes exception handling message construction and routing. (p-30, 1-24)		X	Claims insurance linked to bank. No design.			
Access and processing of data for analysis purposes. (p-30, 26-30 through p-31, 1-30)		X				
Reporting and statistical information for service provider monitoring. (p-30, 26-30)		X				
Service data analysis for benefit calculations.		X				
Organizational summaries can be generated for use in developing practice guidelines. (p-31, 1-7)		X				
Cost and outcomes of care information for analysis. (p-31, 9-30)		X				
Access to full service recipient care information for adjudication of claims and for coverage decisions. (p-31, 10-12)		X				
Data query capability for user-selected parameters. Query as one-time or ongoing. (p-31, 20-30)		X				
Security rules built into database query process. (p-31, 20-30)		X				

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<b>Health/Plan Sponsor/Features</b>	<b>Comments</b>	<b>Johnson</b>	<b>Cummings</b>	<b>Pitroda</b>	<b>Ertel</b>	<b>Edelson/ Mayaud</b>
Open enrollment processes allow user to make changes to sponsored benefit plans (through access to central host). (p-32, 1-16)		X				
User can make changes to benefit information including auxiliary reimbursement accounts, insurance, annuity, retirement or workman's compensation in plan/benefit database. (p-32, 12-15)		X				
User can make changes to plan participation records via subscriber/medical history database. (p-32, 12-16)		X				
Production and distribution of new or replacement individual information devices can be requested or devices can be deactivated. (p-32, 18-22)		X				
System provides marketing and enrollment support for care plans. (p-6, 22-25)		X				
Users can search for appropriate plans within the plan/benefit database. (p-32, 28-30)		X				
Users can compare plans and communicate with insurer to apply for plan inclusion. (p-32, 30 through p-33, 1-22)		X				
When medical insurer adds or changes plans, automatic notification is sent to benefit provider. (p-33, 1-3)		X				
Exception item processing and dispute resolution features. (p-33, 5-10)		X				
Local storage can be used for electronic		X				

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messaging. (p-33, 12-16)						
The user can construct data queries of information stored in the subscriber/medical history and provider/service history databases.		X				
Data query results used for management of medical care reimbursement accounts, workers' compensation or other auxiliary plans, to respond to service audits, information for tax and reporting or for service participant queries. (p-33, 24-30 through p-34, 1-8)		X				
<i>Individual/Service/Recipient features</i>	<i>Comments</i>	<i>Johnson</i>	<i>Cummings</i>	<i>Pitroda</i>	<i>Eitel</i>	<i>Edelson/Mayaud</i>
Service recipient is provided with an individual information device which holds identification and critical care information. (p-34, 15-25)		X	Claimed as optional, but not defined.	X		
Device provides individual health care history, allergies, current medications, emergency and contact information to service providers. (p-34, 15-30)		X		Could if defined		
Device can be read by portable reader. (p-34, 27-30)		X		X		
Service provider can use history information from device in conjunction with diagnostic features to aid treatment option definition. (p-35, 1-3)		X				
Eliminates need to fill out paper forms or remember episodes of care, dates, treatments, outcomes, provider, etc. (p-35, 5-8)		X		Could if defined		
Eliminates problems of selecting referral service providers covered by service recipient plan(s) and identifying payment responsibility. (p-35, 7-9)		X				
Users can access treatment option		X				

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information and define their own care network. (p-35, 11-14)						
Service recipients can search health care provider and organization records. (p-6, 27-30)		X				
Service recipients can review contents of health care record and perform searches supporting treatments and care contacts. (p-7, 1-3)		X				
Users can access information on benefit plans, reimbursement accounts, insurance, annuity, retirement or workers' compensation plans. (p-35, 22-27)		X				
Users can retrieve plan, treatment and payment history information to construct messages and transmit them to other service participants within the system. (p-35, 22-30 through p-38, 1-24)		X				
Users can audit their (or family member) history and emergency information, identify changes and route changes, questions, options or appointment requests to other service participants within the system. (p-36, 1-12 through p-38, 1-3)		X				
User can access health plan information for open enrollment or for ongoing review of plan parameters on approved procedures, pharmaceuticals, providers, payment/reimbursement ceilings and out-of-network services coverage. (p-36, 14-28)		X				
User can use comparison form on computer to compare plans and their options, coverage, service providers and with result, construct messages and requests to other service participants within the system. (p-36, 20-28)		X				

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User can access health care information and use formatting option to construct printed reports, including IRS accounting, listing for health care reimbursement accounts or general health care information records. (p-38, 5-8)		X				
User can query the AI medications/ procedures database to access health care information, review procedures, medications and other treatment options and can use the information in the construction of messages to other service participants. (p-38, 10-24)		X				
<b>Medical/Service/Provider/Features</b>	<b>Comments</b>	<b>Johnson</b>	<b>Cummings</b>	<b>Piroda</b>	<b>Eitel</b>	<b>Edelson/Mayaud</b>
User can review patient health care history records stored on ICC and full records from subscriber/ medical history database. (p-39, 1-5)		X		Can review records on card.		
User can display default or customized patient care record including identification, emergency information and episodes of care and other treatment information. (p-16, 5-23)		X			Care record is only for diagnosis related groups (DRG) analysis in submitting claims for payment	
Customized GUI formats can be configured to follow the standards for different specialties. (p-18, 4-10)		X				
Portable device, like mobile unit, can be used to access emergency information, either on or off-line. (p-39, 3-13)		X		Could if defined.		Portable device used, but no emergency info
User can download diagnostic codes and categories use during consultation. (p-39, 15-22)		X				Categories but not diagnostic codes
Patient record can be loaded into a select format for viewing or printing. (p-39, 24-28)		X				
Diagnostic, procedural and medication		X				

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codes are shown with their definitions. (p-39, 28-30)						
Service information, formatted service recipient records and potential diagnostic codes transmitted between the host and remote or provider terminal. (p-5, 17-21) (p-12, 4-11)		X				
Codes for medical plans/benefits shown with full textual code descriptions in selected language. Patient history includes procedures, medications and dates, as well as emergency, allergy, contact and identification information, insurance information, functional status, treatment preferences and comments and changes to history as noted by patient. (p-40, 1-7)		X				
On-line help feature for service provider use. (p-40, 9-24)		X				
Features support service provider access to all patient information, avoiding redundant tests and allowing provider to analyze patient information. (p-40, 22-30)		X				
Supports integration of text, tables, video, animation and audio display. (p-41, 1-2)		X				
Data can be configured to display according to multiple view perspectives and can be used in preparing written records and reports. (p-41, 4-20)		X				
The user can use the data to generate communication with any other participants of the system. (p-41, 22-30)		X				
The service provider uses the service recipient's record and diagnostic codes to prepare updated patient record from result of current appointment. (p-42, 1-15)		X	Claimed, but not designed.			

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Test results and other data can be appended to the patient record. (p-42, 9-15)		X	Claimed, but not operable. Manual only.			
User can access online diagnostic information to prompt for questions, data, and define procedures and limiting factors. (p-42, 17-24)		X	Claimed but not available and no access.			
User can construct online and offline queries for research, training, outcomes research and other questions. (p-42, 26-30 through p-43, 1-22)		X				
User can prepare communication with any other users of the system for professional questions and referrals. (p-43, 5-6)		X				
User can construct an authorization for services and/or referral. (p-43, 24-30 through p-44, 1-26)		X	Claimed, but not designed.			
Service calculates payment amounts for all parties and can submit payment invoicing. (p-44, 1-13)		X	Claimed, but not designed.			
Service can identify referral providers with access information and can send message for appointment to selected provider. (p-44, 15-21)		X	Referral only claimed, but not operable.			
Result of procedure and medication checked for conflict and noted in record. Negative results are included on all printed output. (p-43, 6-12 and p-44, 23-24 and p-45, 27 through p-46, 22)		X	Limited feature claimed, but not designed or operable.			
When request for authorization is declined due to plan parameters, decline message sent, which can initiate a manual procedure to handle exceptions, appeals and questions. (p-44, 26-30)		X	Claimed, but not designed.			
Patient ICC updated with time-stamped		X				

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result of service provider appointment. (p-45, 1-7)						
Patient data used to produce standardized and customized reports and records. (p-45, 9-16)		X				
AI functions used for diagnostic purposes. (p-45, 18 through p-46, 22)		X	Claimed, but not designed.			
User can review plan parameters to define care optimization. (p-46, 26 through p-47, 2)		X				
Data integrity checking performed on all update fields. (p-47, 4-23)		X			Checking for loaded data records	
Security parameters controlled at host for all record updates. (p-47, 17 through p-48, 2)		X				
Centralized expert data update limited to authorized agencies. (p-48, 4-19)		X				
Automation of service payments, insurance claims submissions and EFT payments. (p-48, 25-30)		X				
Preparation of periodic accounting reports. (p-48, 29-30)		X				
Manual , adjustment, and automatic payment record updates. (p-49, 2 through p-50, 18)		X				
Automated billing of un-reimbursed services. (p-49, 1-2)		X				
Communication features allow record attachment and transmission to support issues, questions, exceptions, etc. with other participating entities. (p-50, 4-18)		X	Calls for optional e-mail, but never defines use.			
<b>Medical/Research/Features</b>	<b>Comments</b>	<b>Johnson</b>	<b>Cummings</b>	<b>Pitroda</b>	<b>Ertel</b>	<b>Edelson/Mayaud</b>
Licensing and regulatory information on service provider database available to		X				

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regulatory agencies to perform analysis. (p-25, 28-30 through p-26, 1-9)						
Research queries available to support product development, public health, utilization and quality review, regulatory and compliance review, education, and scientific and health care research. (p-50, 20-24)		X				
Health care data can be provided for research, education and monitoring purposes by a wide array of agencies, institutions, research organizations and companies and are available for regulatory purposes. (p-52, 19-26 and p-53, 4-16)		X				
Queries are available for service providers and service recipients to research treatment options and develop support and information networks. (p-50, 23-26)						
Data queries constructed using the standardized definitions stored in the data dictionary. (p-50, 28-29 and p-55, 10-16)		X				
Repeating query can be defined along with frequency of data download, query can be locally stored and revised as needed. (p-50, 29 through p-51, 30)		X				
Sub-fields for qualifying a search and presenting resulting data can be defined. (p-52, 2-5)		X				
Data can be stripped of identifying information. (p-51, 5-6)		X				
Data returned in a relational database format. (p-54, 1-2)		X				
Data returned from query can be accessed by standard data analysis tools or by customized models. (p-52, 7-9)		X				
Data selection capabilities in which the		X				

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researcher can define data elements and search parameters provides for a wide array of research data opportunities through a single source. (p-52, 28 through p-54, 16)						
Searches are supported for analysis of past clinical experience, including within individual an individual provider setting, and can be used for cost-effectiveness and outcomes of care. (p-53, 24 through p-54, 16)		X				
Standardized pre-selected information processes support automatic integration of search data with locally stored baseline data. (p-54, 18 through p-55, 3)		X				
Features support comparisons of local, state, national and international data to support analysis, as well as promoting regional, national and international health objectives and identification of localized health problems and risks. (p-55, 5-16)		X				
<i>Service/Support Features</i>	<i>Comments</i>	<i>Johnson</i>	<i>Cummings</i>	<i>Piroda</i>	<i>Ertel</i>	<i>Edelson/Mayaud</i>
Platform services designed into the system provide operational maintainability of the entire system infrastructure. (p-55, 18 through p-56, 30)		X				
Backup and restore capabilities built into system ensure data integrity and availability. (p-56, 5-13)		X				
Central features are designed into the platform and used for data structure updates and database record appending. Data management, such as data retention parameters for records, is defined within the data dictionary fields. Central security features support the secure access and data integrity of all data, all users and all		X				

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system and service processing. (p-56, 15-30)						
All security parameters defining access groups and identifying data availability for the access groups for each data field or value range within each field in each system database are under secure control through the security platform services. (p-57, 2-8)		X				
Centralized account parameters apply to the entire platform and define tiered use, pricing and billing relationships which can include nested parent/child entity definitions. (p-57, 10-17)		X				
Update records are identified and applied to the central records to support full audibility for all system records. (p-57, 14-20)		X				
A problem tracking system using electronic foldering capabilities is designed into the platform of shared services to manage all exceptions and dispute processes. (p-57, 20-28)		X				
Customer service has dispute resolution features which include authorized security to update any file through appending an attached record to record under dispute. (p-58, 1-12)		X				
Customer service central record can override an automated activity. (p-58, 1-12)		X				
System defines the core data elements, describes how the standardized codes and definitions are maintained in the common data dictionary, and defines the platform services and how those features are used. (p-15, 6-29)		X				

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Reversal handling for dispute resolution. (p-58, 3-12)		X				
On-line billing history archive available and records can be embedded in electronic message to any user of the service components. (p-58, 14-23)		X				
All system support staff have messaging services to any service participant for all system and service related questions. (p-58, 25-29)		X				
Billing system integrated into platform where the organizational roll-up can be used to define invoiced entities. Counters incremented during system usage enable billing records. (p-59 1-18)		X				
Customers electronically invoiced and payment can be made electronically. (p-59, 14-18)		X				
Electronic invoice copy automatically transmitted to electronic output archive. (p-59, 14-16)		X				
Secure access for designated authorized agencies to add and change standardized codes for all prognoses, treatments, medications and treatments as stored within the data dictionary. (p-59, 20 through p-60, 18)		X				
Authorized agencies have capabilities to define new category codes, cross references, descriptions and codes identifying warning conditions or incompatibilities. (p-60, 2-5)		X				
Active dates can be defined by authorized agencies for application of data dictionary changes, to support procedural approvals.		X				

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etc. (p-60, 7-18)						
Authorized agencies can update service provider information including licensing information, disciplinary actions, continuing education, and organizational ownership. (p-60, 20 through p-61, 16)		X				